

Taking EU Targets Seriously: Pesticide Tax could Halve the Use of Pesticides

The study “Pesticide tax in the EU – Various levy concepts and their impact on pesticide reduction” by the Helmholtz Centre for Environmental Research (UFZ) examined different concepts for a tax or levy on pesticides. Commissioned by a broad alliance of NGOs and the German GLS Bank, the study shows that a risk-based levy can halve both the use of chemical pesticides and particularly hazardous pesticides until 2030 as envisaged by the European Commission (EC 2020) in its Farm-to-Fork Strategy.

KEY MESSAGES

- ▶ Taxes can halve pesticide use
- ▶ Best steering effect by linking the tax to application rates
- ▶ Risks must be incorporated into tax design
- ▶ EU has competences for introducing a pesticide levy
- ▶ It's time for a European pesticide taxation

BACKGROUND

The use of chemical pesticides can harm non-target plants, insects, birds, mammals as well as amphibians and is one of the main pressures in agroecosystems (JRC et al. 2020). Nevertheless, the European pesticide policy with its Pesticide Framework Directive 2009/128/EC and the obligation to integrated pest management has not reduced pesticide use and the associated risks in the last decade. The amount of active substances used in the EU continues to be around 380,000t per year (ECA 2020; JRC et al. 2020: 89). Despite more stringent approval requirements, the number of applications and the ecological hazard potential have even grown considerably, since more and more highly effective, yet low-dose substances have been approved in recent decades. Low pesticide prices cement pesticide-intensive cultivation systems and render uneconomical preventative measures and non-chemical pest control for many agricultural holdings.

- ▶ **Complete study** (Download PDF)
www.ufz.de/index.php?en=36458

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RESULTS & RECOMMENDATIONS

► Taxes can halve pesticide use

Data from Denmark and our simulations for Germany show that a risk-based levy can halve total sales of pesticides and especially the sale of particularly hazardous pesticides (see Figure 1 below). To achieve this substantial reduction, a levy must be sufficiently high and differentiated according to risks for human health and the environment. An undifferentiated ad valorem-levy of 35 percent on net sales prices as proposed by Femenia/Letort 2016 is not sufficient. A risk-based levy needs to be based on the maximum allowed application quantity per hectare and year (crop growing period) to avoid a simple substitution of less toxic pesticides with high application rates by high toxic pesticides with low doses.

Figure 1: Simulated long-term quantity changes of active substance sales in Germany depending on levy concept and pesticide scope

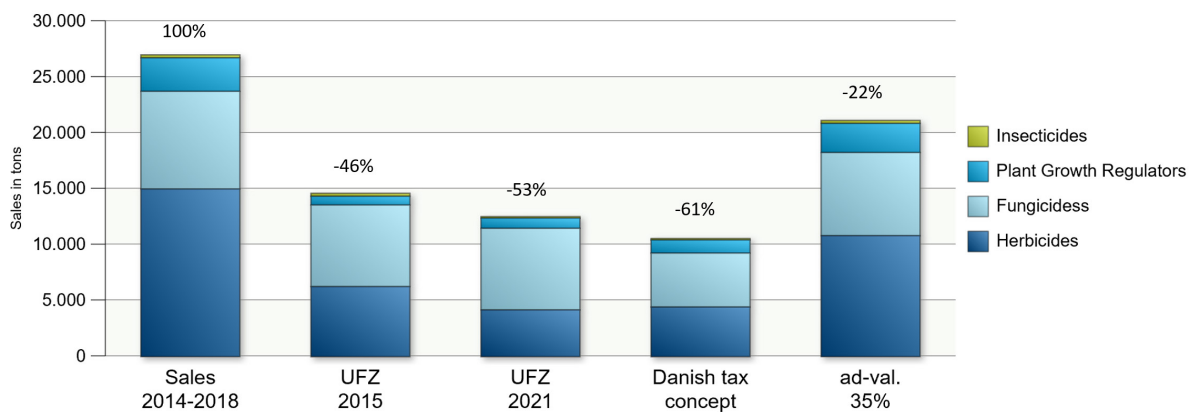
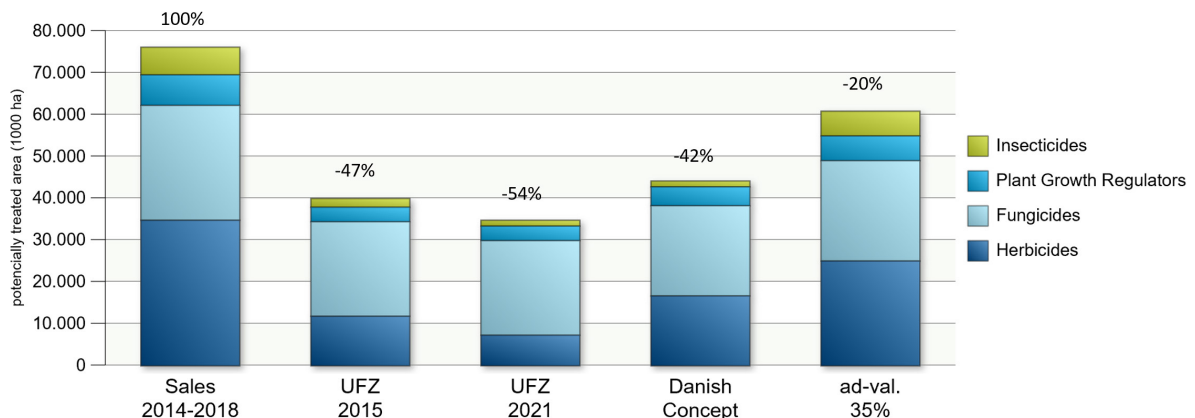


Figure 2: Simulated long-term changes in the potentially treatable area in Germany depending on levy concept



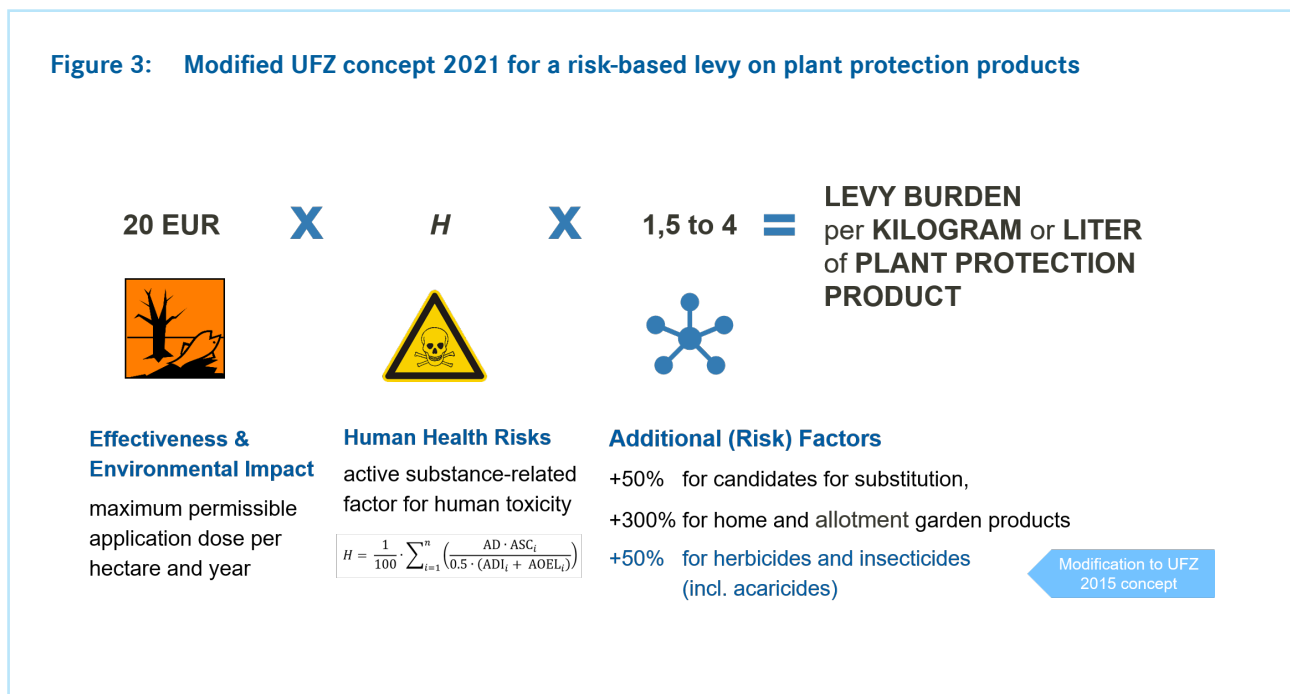
The left columns (sales 2014–18) represent the averaged actual sales in Germany from 2014 to 2018. The following columns display the results of the modelling for different levy concepts examined with an assumed price elasticity of -0.4 for long-term steering effects of a price increase.

► **Best steering effect by linking the tax to application rates**

Our simulation indicates that a levy concept which takes into account the maximum permitted application dose will reduce the burden on the environment and people – measured in potentially treatable areas – more than a tax based on risk per unit of mass or volume, as in Denmark (compare Figure 1 and 2). The results of the simulation and the derived recommendations are applicable to other Member States and the EU as a whole.

► **Risks must be incorporated into tax design**

A levy concept that takes the large differences in application quantities into account was proposed by the UFZ in 2015 (Möckel et al. 2015) and is further developed in the present study. We suggest a levy concept with a basic levy rate of 20 EUR for the maximum allowed application dose of a plant protection product per hectare and year. The basic rate is multiplied by a factor for the specific human toxicity of a product based on concentration and the toxicity of each active ingredient in the product. If applicable, this levy rate is further adjusted by additional factors for candidates of substitution, private sector products, herbicides, and insecticides (see Figure 3).



► **EU has competences for introducing a pesticide levy**

On the basis of the Treaty on the Functioning of the European Union (TFEU), the EU can legally introduce a risk-based levy on plant protection products, either as its own levy or as an obligation for the Member States to introduce corresponding national levies, based on its competences in the areas of health, environment and indirect taxation.

► **It's time for a European pesticide taxation**

It will be difficult to achieve the Farm-to-Fork targets by simply strengthening the legislation on the authorization and use of pesticides. The authors therefore recommend complementing the existing European regulations with an EU-wide risk-based levy on chemical plant protection products.

STUDY APPROACH

In our study, we compare different concepts for a levy on pesticides and analyse in particular the development of pesticide use in Denmark, where an effective risk-based pesticide tax was introduced in 2013. Taking Germany as an example, we use a dynamic database approach to simulate the different steering effects of various levy concepts to estimate how different levies would affect pesticide use in terms of quantity, treatable area, and risks. The study further provides an overview of the discussion about a European pesticide tax, the limits of regulatory control as well as the economic basis of steering levies. Additionally, we analysed the legal competences to introduce a pesticide tax in the EU.

THE STUDY WAS COMMISSIONED BY

Aurelia Stiftung, BioBoden Genossenschaft eG, Bioland e.V., Bündnis für eine enkeltaugliche Landwirtschaft e.V., Deutsche Umwelthilfe e.V., Foodwatch e.V., GLS Bank, GLS Bank Stiftung, GLS Treuhand – Zukunftsstiftung Landwirtschaft, Greenpeace e.V., Pestizid Aktions-Netzwerk e.V. (PAN Germany), Soil & More Impacts GmbH, WWF Deutschland.

CITED REFERENCES

EC – European Commission (2020), A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system, COM(2020) 381 final, 20 pp, https://ec.europa.eu/food/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf

European Court of Auditors (2020), Sustainable use of plant protection products: limited progress in measuring and reducing risks, Luxembourg, Special Report 05, 49 pp.

Femenia, F. & Letort, E. (2016), How to significantly reduce pesticide use: An empirical evaluation of the impacts of pesticide taxation associated with a change in cropping practice. *Ecological Economics*, 125, 27-37, <https://doi.org/10.1016/j.ecolecon.2016.02.007>

JRC et al. – Joint Research Centre, European Environment Agency, DG Environment, European Topic Centre on Biological Diversity, European Topic Centre on Urban, Land and Soil Systems (2020), Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment, 452 pp.

Möckel, S., Gawel, E., Kästner, M., Knillmann, S., Liess, M., Bretschneider, W. (2015), Einführung einer Abgabe auf Pflanzenschutzmittel in Deutschland, Berlin, Duncker&Humblot, 305 pp. For a Policy Summary in German language see www.ufz.de/export/data/global/86986_Zusammenfassung_Gutachten.pdf

Möckel, S., Gawel, E., Liess, M., Neumeister, L. (2021), Pesticide tax in the EU – Various levy concepts and their impact on pesticide reduction, 112 pp., [www.ufz.de/export/data/global/257265_Study_Pesticide-Taxes\(2021\).pdf](http://www.ufz.de/export/data/global/257265_Study_Pesticide-Taxes(2021).pdf)